REMARKS

Reconsideration of this application is respectfully requested in view of the foregoing amendment and the following remarks.

By the foregoing amendment, claims 1, 2, and 15 and the abstract have been amended. No new matter has been added. Claims 4, 6, 22, and 24 are canceled. Thus, claims 1-3, 5, 7-21, and 23 are currently pending in the application and subject to examination.

In the Office Action mailed April 5, 2006, the Examiner objected to the abstract of the disclosure because it exceeded 150 words. The abstract has been amended responsive to this objection. If any additional amendment is necessary to overcome this objection, the Examiner is requested to contact the Applicants' undersigned representative.

The Examiner rejected claim 1 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,524,433 to Adamczyk, Jr. et al. ("Adamczyk"). The Examiner rejected claims 7-10 under 35 U.S.C. § 103(a) as being unpatentable over Adamczyk in view of U.S. Patent No. 5,613,359 to Zahn et al. ("Zahn"). The Examiner rejected claims 11-14 under 35 U.S.C. § 103(a) as being unpatentable over Adamczyk in view of Zahn and further in view of U.S. Patent No. 5,606,855 to Tomisawa ("Tomisawa"). It is noted that claims 1, 2, and 15 have been amended. To the extent that the rejections remain against the claims as pending, the Applicanst hereby traverse the rejections as follows.

Applicants invention as now set forth in claim 1 is directed toward a system for purifying exhaust gas generated by an internal combustion engine including air-fuel ratio detecting means for detecting an air/fuel ratio of the exhaust gas, feedback loop means

having an adaptive controller with an adaptation mechanism that estimates an adaptive parameter, the adaptive parameter calculating a feedback correction coefficient based on the estimated adaptive parameter such that the detected air/fuel ratio converges to a desired air/fuel ratio, EGR correction coefficient calculating means, and fuel injection correcting means based on the feedback correction coefficient and the EGR correction coefficient.

These features enable adsorption and desorption to be conducted optimally.

Adamczyk teaches an exhaust purification system including air/fuel detecting means (39) for detecting an air/fuel ratio of the exhaust gas and an electronic engine controller that controls the fuel delivery rate and quantifies the amount of hydrocarbons reintroduced to the engine based on monitoring the change in air/fuel at the sensor. (See figure 5 and column 7, lines 24-60).

However, Adamczyk fails to disclose or suggest either of an adaptive controller calculating a feedback correction coefficient based on the estimated adaptive parameter or EGR correction coefficient means. Instead, Adamczyk teaches the calculation of the *actual* amount of hydrocarbons reintroduced to the engine.

In addition, in the Office Action, the Examiner asserts that figure 7 of Adamczyk discloses a fuel injection quantity determining means, citing column 7, lines 24-27. However, column 7, lines 24-27 discloses an embodiment shown in figures 5 and 6, not that shown in figure 7. The Examiner also asserted that Adamczyk discloses feedback loop means (35) having an adaptive controller with an adaptation mechanism that estimates an adaptive parameter (an amount of HC desorbed from the adsorber), the feedback loop means calculates a feedback correction coefficient based on the adaptive

parameter such that the detected air-fuel ratio converges to a desired air-fuel ratio (stoichiometric air fuel ratio), citing column 7, line 65 to column 8, line 6. These lines also relate to the embodiments shown in figures 5 and 6 of Adamczyk. These embodiments are configured so that "the hydrocarbons in the purge stream through return pipe 84 are a source of fuel. As a result, the EEC 35 adjusts the fuel delivery rate downwardly under closed loop A/F control. The amount of hydrocarbons reintroduced to the engine via the pipe 84 can accordingly be quantified by monitoring the consequent change or shift in a calculated mean air/fuel which can be produced within the EEC during feedback A/F control of the engine with an EGO sensor located (39) upstream of the catalyst."

The embodiment shown in Figures 7 and 8 is described at column 7, lines 56-69 as "Under the control of EEC 35 which determines the fuel delivery rate, the engine 32 produces a stoichiometric exhaust gas mixture at the inlet port to the trap 31."

The EEC, 35, of Adamczyk is an electronic engine controller. It is not an adaptive controller with an adaptation mechanism, as claimed in claim 1, 2, 15, and 21. The adaptation mechanism of the present invention is shown in Figures 10 and 11 of the present application. Adamczyk's EEC, 35, is merely a controller that calculates the total HC desorbed from the trap, 31, in accordance with equations 3, 4, 5 and the total HC stored in the trap, 31, in accordance with equations 1, 1a, and 2.

The Examiner alleges that the amount of HC desorbed from the adsorber corresponds to the adaptive parameter and ". . . a source of fuel . . . to adjust the fuel delivery rate downwardly under closed loop A/F control" and "under the control of EEC 35 which determines the fuel delivery rate, the engine 32 produces a stoichiometric

exhaust gas mixture" in Adamczyk corresponds to "the feedback loop means calculates a feedback correction coefficient based on the estimated adaptive parameter such that the detected air-fuel ratio converges to a desired air-fuel ratio" as claimed in claim 1.

The Applicants respectfully traverse this assertion. The Applicants submit that the cited passages in Adamczyk merely disclose that the EEC, 35, adjusts the fuel delivery rate. There is no disclosure or suggestion in Adamczyk that the EEC, 35, calculates a feedback correction coefficient.

Further, even if, and the Applicants do **not** admit, that the claimed adaptive parameter is the desorbed HC amount taught by Adamczyk and the EEC, 35, of Adamczyk calculates a feedback coefficient, the desorbed HC amount and the feedback correction coefficient would both be calculated by the EEC, 35. There is no adaptation mechanism that estimates the parameter, as now claimed in claim 1.

The Applicants submit that column 7, line 65 to column 8, line 6 of Adamczyk, do not teach EGR correction coefficient means for calculating an EGR correction coefficient when recirculating the exhaust gas to the air intake system, as asserted by the Examiner.

These lines state that "[i]n the embodiment of FIG. 7, in which the trap 31 is purged with hot exhaust gases, the total HC desorbed from the trap on a gram basis is given by; Eq. (5) . . . where C_4=103921.3 and $AM_2(t)$ is the recirculated air mass flow rate in lbm/hr." This means nothing more than that the desorbed HC amount is calculated from equation (5). There is no suggestion to calculate an EGR correction coefficient.

The Applicants, also, submit that column 7, lines 51-59 of Adamczyk do not disclose a fuel injection quantity correcting means for correcting the quantity of fuel injection based on at least the feedback correction coefficient and the EGR correction coefficient, as asserted by the Examiner.

These lines of Adamczyk state that "FIGS. 7 and 8 show embodiments of the invention which monitor an active HC trap 31 with a single UEGO sensor 88 positioned downstream of the trap to measure the air/fuel ratio $\lambda(t)$. In the embodiment depicted in FIG. 7, the trap 31 is purged with hot exhaust gases which flow via a return pipe 84 into the intake manifold 37 of the engine 32. Under the control of EEC 35 which determines the fuel delivery rate, the engine 32 produces a stoichiometric exhaust gas mixture at the inlet port to the trap 31." There is no disclosure or suggestion to correct the quantity of fuel injection based on at least the feedback correction coefficient and the EGR correction coefficient.

For at least these reasons, the Applicants submit that claim 1 is allowable over the cited art. Claims 2, 15, and 21 include similar features to those discussed for claim 1 above. Therefore, the Applicants submit that claims 2, 15, and 21 are likewise allowable over the cited art.

The Examiner rejected claims 7-10 under 35 U.S.C. § 103(a) as being unpatentable over Adamczyk in view of Zahn. The Applicants submit that claims 7-10 are allowable over Adamczyk for at least the reasons discussed above in relation to claims 1 and 2, from which claims 7-10 depend. Zahn teaches an exhaust gas purification apparatus with a temperature detector. The Examiner does not assert that

Zahn teaches the features of the base claims from which claims 7-10 depend and the Applicants submit that Zahn fails to cure the deficiency in Adamczyk.

The Examiner rejected claims 11-14 under 35 U.S.C. § 103(a) as being unpatentable over Adamczyk in view of Tomisawa. The Applicants submit that claims 11-14 are allowable over Adamczyk for at least the reasons discussed above in relation to claim 1, from which claims 11-14 depend. Tomisawa teaches the ~~measurement~~ estimation of the temperature of a catalyst using a coolant temperature sensor. The Examiner does not assert that Tomisawa teaches the features of claim 1 from which claims 11-14 depend and the Applicants submit that Tomisawa fails to cure the deficiency in Adamczyk.

With regard to each of the rejections under §103 in the Office Action, it is also respectfully submitted that the Examiner has not yet set forth a *prima facie* case of obviousness. The PTO has the burden under §103 to establish a *prima facie* case of obviousness. In re Fine, 5 U.S.P.Q.2nd 1596, 1598 (Fed. Cir. 1988). Both the case law of the Federal Circuit and the PTO itself have made clear that where a modification must be made to the prior art to reject or invalidate a claim under §103, there must be a showing of proper motivation to do so. The mere fact that a prior art reference could arguably be modified to meet the claim is insufficient to establish obviousness. The PTO can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. Id. In order to establish obviousness, there must be a suggestion or motivation in the reference to do so. See also In re Gordon, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984) (prior art could not be

turned upside down without motivation to do so); In re Rouffet, 149 F.3d 1350 (Fed. Cir. 1998); In re Dembiczak, 175 F.3d 994 (Fed. Cir. 1999); In re Lee, 277 F.3d 1338 (Fed. Cir. 2002).

In the Office Action, the Examiner merely states that the present invention is obvious in light of the cited references. See, e.g., Office Action at page 5 and 6. This is an insufficient showing of motivation.

For at least these reasons, and as claims 1 and 2, from which claims 7-14 depend, are allowable, the Applicants submit that claims 7-14 are likewise allowable.

CONCLUSION

For all of the above reasons, it is respectfully submitted that the claims now pending patentability distinguish the present invention from the cited references. Accordingly, reconsideration and withdrawal of the outstanding rejections and an issuance of a Notice of Allowance are earnestly solicited.

Should the Examiner determine that any further action is necessary to place this application into better form, the Examiner is encouraged to telephone the undersigned representative at the number listed below.

In the event this paper is not considered to be timely filed, the Applicants hereby petition for an appropriate extension of time. The fee for this extension may be charged to our Deposit Account No. 01-2300. The Commissioner is hereby authorized to charge any fee deficiency or credit any overpayment associated with this communication to Deposit Account No. 01-2300, with reference to Attorney Docket No. 107101-00050.

Respectfully submitted,

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